CLAIMS:

1. A method comprising:

measuring a first emission spectrum of a display for a maximum display level;

measuring a second emission spectrum of the display for a minimum display level;

measuring cumulative emission spectra for each of a plurality of color channels of a display with the respective color channel at a maximum level and the other channels at minimum levels;

assuming a transmission spectrum for a light valve in the display operating at a maximum level;

determining an inverted contrast ratio based on the first emission spectrum measurement and the second emission spectrum measurement;

creating a set of equations for the color channels based on the measured cumulative emission spectra for the color channels, the measured inverted contrast ratio, and the assumed transmission spectrum; and

solving the equations to determine a light source spectrum for each of the color channels.

2. The method of claim 1, wherein the cumulative emission spectrum of the display comprises a summation of all color channel emission spectra.

3. The method of claim 2, wherein the emission spectrum for each of the color channels combines the light source spectrum for the color channel and the transmission spectrum for the light valve.

4. The method of claim 1, wherein the light source spectrum for each of the color channels comprises a backlight spectrum and a transmittance spectrum for a filter of each color channel.

5. The method of claim 1, wherein the transmission spectrum is dependent upon a digital driving signal and the wavelength of the light source.

6. The method of claim 1, wherein assuming the transmission spectrum for the light valve includes at least one of:

assuming the cumulative emission spectrum for the respective color channel constitutes the light source spectrum for the color channel;

using default parameters for a particular type of the display;

squaring a cosine function of a phase retardation associated with the light valve; and

squaring a sine function of the phase retardation associated with the light valve.

7. The method of claim 1, wherein the first emission spectrum measurement comprises all the color channels operating at a maximum digital driving signal to generate a white display.

8. The method of claim 1, wherein the second emission spectrum measurement comprises all the color channels operating at a minimum digital driving signal to generate a black display.

9. The method of claim 1, wherein the plurality of color channels comprises a red channel, a green channel, and a blue channel.

10. The method of claim 1, wherein the display comprises a liquid crystal display (LCD).

11. A multi-channel display system comprising:

a display;

a plurality of color channels in the display;

a light source and a light valve to model each of the color channels; and

means for driving the light valve based on a color profile defined by light source spectra, the light source spectra reconstructed from measured emission spectra for the color channels, an inverted contrast ratio for the display, and an assumed transmission spectrum for the light valve in the display.

12. The multi-channel display system of claim 11, wherein the display comprises a liquid crystal display (LCD).

13. The multi-channel display system of claim 11, wherein the light source comprises a backlight and color filters.

14. The multi-channel display system of claim 11, wherein the light valve comprises fixed polarizers and rotating liquid crystal cells (LCC).

15. The multi-channel display system of claim 14, wherein the LCC rotation depends on a wavelength of the light source and a digital driving signal.

16. The multi-channel display system of claim 11, wherein the plurality of color channels comprise a red channel, a green channel, and a blue channel.

17. The multi-channel display system of claim 11, wherein the driving means sets a digital driving signal of the light valve based on the color profile.

18. A method comprising determining a light source spectrum for each of a plurality of color channels of a display based on measured emission spectra for the color channels, an inverted contrast ratio for the display, and an assumed transmission spectrum for a light valve in the display.

19. The method of claim 18, wherein the measured emission spectra for the color channels comprise a respective color channel at a maximum level and the other channels at minimum levels.

20. The method of claim 18, wherein the inverted contrast ratio for the display comprises measured emission spectra for a maximum display level and a minimum display level.

21. The method of claim 18, wherein the inverted contrast ratio for the display comprises assumed transmission spectra for the light valve operating at a maximum level and a minimum level.

22. The method of claim 18, wherein the assumed transmission spectrum for the light valve is at a maximum level.

23. The method of claim 18, wherein assuming the transmission spectrum for the light valve includes at least one of:

assuming the measured emission spectra for the color channels constitute the light source spectra for the color channels;

using default parameters for a particular type of the display;

squaring a cosine function of a phase retardation associated with the light valve; and

squaring a sine function of the phase retardation associated with the light valve.

24. The method of claim 18, wherein the plurality of color channels comprises a red channel, a green channel, and a blue channel.

25. The method of claim 18, wherein the display comprises a liquid crystal display (LCD).

26. A computer-readable medium comprising instructions for causing a programmable processor to:

receive cumulative emission spectrum measurements for each of a plurality of color channels of a display with the respective color channel at a maximum level and the other channels at minimum levels;

assume a transmission spectrum for a light valve in the display operating at a maximum level;

determine an inverted contrast ratio for the display;

solve a set of equations to determine a light source spectrum for each of the color channels based on the measured cumulative emission spectra for the color channels, the inverted contrast ratio, and the assumed transmission spectrum; and

drive the light valve based on a color profile defined by the light source spectra.

27. The computer-readable medium of claim 26, wherein the inverted contrast ratio of the display is based on a measured first emission spectrum of the display for a maximum display level and a measured second emission spectrum of the display for a minimum display level.

28. The computer-readable medium of claim 26, wherein the inverted contrast ratio of the display is based on the assumed transmission spectrum for the light valve in the display operating at the maximum level and an assumed transmission spectrum for the light valve in the display operating at a minimum level.

29. The computer-readable medium of claim 26, wherein the instructions for causing a programmable processor to assume the transmission spectrum for the light valve includes at least one of instructions for causing a programmable processor to:

assume the cumulative emission spectrum for the respective color channel constitutes the light source spectrum for the color channel;

use default parameters for a particular type of the display;

square a cosine function of a phase retardation associated with the light valve; and

square a sine function of the phase retardation associated with the light valve.

30. The computer-readable medium of claim 26, wherein the instructions for causing a programmable processor to drive the light valve comprise instructions for causing a programmable processor to set a digital driving signal of the light valve based on the color profile.

31. A method comprising:

measuring cumulative emission spectra for each of a plurality of color channels of a display with the respective color channel at a maximum level and the other channels at minimum levels;

assuming a first transmission spectrum for a light valve in the display operating at a maximum level;

assuming a second transmission spectrum for the light valve in the display operating at a minimum level;

calculating an inverted contrast ratio based on the first transmission spectrum assumption and the second transmission spectrum assumption;

creating a set of equations for the color channels based on the measured cumulative emission spectra for the color channels, the calculated inverted contrast ratio, and the assumed first transmission spectrum; and

solving the equations to determine a light source spectrum for each of the color channels.

32. The method of claim 31, wherein the cumulative emission spectrum of the display comprises a summation of all color channel emission spectra.

33. The method of claim 32, wherein the emission spectrum for each of the color channels combines the light source spectrum for the color channel and the transmission spectrum for the light valve.

34. The method of claim 31, wherein the light source spectrum for each of the color channels comprises a backlight spectrum and a transmittance spectrum for a filter of each color channel.

35. The method of claim 31, wherein the first transmission spectrum assumption comprises the light valve operating at a maximum digital driving signal to allow a maximum amount of light to be emitted.

36. The method of claim 31, wherein the second transmission spectrum assumption comprises the light valve operating at a minimum digital driving signal to allow a minimum amount of light to be emitted.

37. The method of claim 31, wherein the plurality of color channels comprises a red channel, a green channel, and a blue channel.

38. The method of claim 31, wherein the display comprises a liquid crystal display (LCD).

39. The method of claim 31, wherein the transmission spectrum is dependent upon a digital driving signal and the wavelength of the light source.

40. The method of claim 31, wherein assuming the transmission spectrum for the light valve includes at least one of:

assuming the cumulative emission spectrum for the respective color channel constitutes the light source spectrum for the color channel;

using default parameters for a particular type of the display;

squaring a cosine function of a phase retardation associated with the light valve; and

squaring a sine function of the phase retardation associated with the light valve.